

In 1988 six study sites were selected in areas with low salinity along the western edge of Pamlico Sound, and 6 in areas with high salinity along the eastern edge of Pamlico Sound and in Core Sound (Fig. 2). At each site we placed 12 mats at deep (~3 m) and 12 mats at shallow (~1 m) depths. At each depth 6 mats were designated "recruitment mats" and 6 were designated "permanent mats". At each census the recruitment mats were retrieved, all spat were counted, and retrieved mats were replaced with new mats. The permanent mats were retrieved, all spat were counted and measured, and the mats re-deployed. During 1988 only, we noted whether spat were located on the top or bottom surfaces of the shells. We censused each site at approximately 3 week intervals from May through October 1988. Thus "recruitment" in this paper refers to the settlement of oyster larvae and their subsequent survival for a period of up to 3 weeks.

In 1989, 6 recruitment mats were censused at each site on a similar schedule as in 1988. However, in 1988 it was evident that oyster recruitment and/or subsequent survival might have been inhibited by the presence of algae or other sessile invertebrates (e.g., tube worms, encrusting bryozoans, and tunicates). We reasoned that fouling of cultch might increase with time and that different fouling communities might develop on cultch deployed at different times (Sutherland and Karlson 1977). Therefore, in 1989 we altered our design for the permanent mats in order to determine the effect of submergence time on the accumulation of oyster spat on permanent mats. An initial set of 3 permanent mats was deployed in May. A new set of 3 permanent mats was added in July and again in August, for a total of 9 permanent mats at each of the two depths at each site. Permanent mats were sampled for numbers of spat per shell and sizes of spat at 6 weeks after deployment and when observations ended in October. In addition, shells on the permanent mats were censused for the presence of other sessile organisms 6 weeks after deployment and at the end of October. This was accomplished by noting the species present under 10 randomly spaced points distributed over an area the size of the oyster shell (e.g., Sutherland 1981). Only the lower shell surface was sampled because most settlement occurred here and sedimentation was reduced.

In 1990, 6 recruitment mats were censused at each site at 3 week intervals, as in 1988 and 1989. However, permanent mats were deployed only once in May and the number of mats at each depth and site was reduced to 3. Sampling of spat size and density on permanent mats was conducted at 3 week intervals from May to November 1990.

In all three years we also measured surface water temperature and salinity while censusing each site. These